EXHIBIT 15

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

SHOPIFY INC. AND SHOPIFY (USA), INC., Plaintiffs and Counterclaim Defendants, v. EXPRESS MOBILE, INC., Defendant and Counterclaim Plaintiff.	C.A. No. 19-439-RGA

SHOPIFY INC. AND SHOPIFY (USA) INC.'S THIRD SUPPLEMENTAL INVALIDITY CONTENTIONS

I. INTRODUCTION

Pursuant to the Court's October 15, 2019 Scheduling Order (Dkt. No. 36), as modified by the Court's orders of June 18, 2020 (Dkt. No. 134) and July 22, 2020 (Dkt. No. 152) and paragraph 4(d) of the Default Standard for Discovery, Plaintiffs Shopify Inc. and Shopify (USA), Inc. (collectively, "Shopify") hereby serve their Third Supplemental Invalidity Contentions ("Invalidity Contentions") for U.S. Patent Nos. 6,546,397 ("the'397 patent"), 7,594,168 ("the'168 patent", collectively with the '397 patent, the "First Set of Patents"), 9,063,755 ("the '755 patent"), 9,471,287 ("the '287 patent") and 9,928,044 ("the '044 patent", collectively with the '755 patent and the '287 patent, the "Second Set of Patents," and the Second Set of Patents collectively with the First Set of Patents, "the Patents-in-Suit"). Shopify previously served its initial invalidity contentions ("Initial Invalidity Contentions") on November 22, 2019, Supplemental Invalidity Contentions on February 5, 2020 ("Supplemental Invalidity Contentions"), and Second Supplemental Invalidity Contentions on July 23, 2020 ("Second Supplemental Invalidity Contentions.").

Shopify incorporates by reference its Election of Prior Art and Prior Art Grounds, served July 23, 2020 ("Election of Prior Art"). Charts relating to each elected prior art are attached hereto as Exhibits A1-A6, B1-B6, C1-C6, D1-D6, and E1-E6. In addition, Shopify further incorporates all discussion below relevant to the prior art or the prior art grounds elected in its Election of Prior Art.

The prior art identified in these disclosures is identified with respect to Express Mobile Inc.'s ("Express Mobile") asserted claims (the "Asserted Claims"), as disclosed in Express Mobile's Disclosure of Election of Asserted Claims, served July 7, 2020 ("First Elected Claims") which limited the claims asserted in Express Mobile's Supplemental Infringement Contentions ("Infringement Contentions"), served July 2, 2020. Shopify reserves the right to rely on

additional references with respect to claims later identified by Express Mobile as of the service of these disclosures, and to object to any assertion of additional claims. Shopify's discovery and investigation in connection with this lawsuit are continuing and, thus, these disclosures are based on information obtained to date. Express Mobile has failed to produce relevant, discoverable information relating to these contentions and Shopify reserves the right to supplement these disclosures in light of Express Mobile's failure to produce the requested information. Additionally, Shopify is informed and believes that Express Mobile already is in possession of further prior art to the Patents-in-Suit, and Shopify incorporates that prior art material to the extent Express Mobile has failed to produce it in a timely fashion. To the extent that Shopify obtains additional information, including the information improperly withheld by Express Mobile or other information, Shopify reserves the right to supplement these Invalidity Contentions. Shopify also reserves the right to supplement these contentions in accordance with the Delaware Default Standard for Discovery and the Scheduling Order entered in this case.

These Invalidity Contentions are not an admission by Shopify that the accused products, including any current or past iteration of these products, are covered by, or infringe these claims. Shopify reserve all rights to amend or supplement these Invalidity Contentions, including after the Court issues a claim construction ruling, or if Express Mobile amends its infringement contentions to specifically point out and explain its infringement theories.

The Asserted Claims are invalid as anticipated by prior art under 35 U.S.C. § 102 and/or that the Asserted Claims are obvious in view of prior art and the knowledge of a person having ordinary skill in the art under 35 U.S.C. § 103. Shopify reserves the right to rely on any identified piece of prior art individually to anticipate the Asserted Claims and/or to render them obvious in view of the knowledge of one having ordinary skill in the art or in combination with

other references identified herein. Shopify reserves the right to respond to any allegations of secondary considerations of obviousness set forth by Express Mobile or its expert witness, in due course under the schedule set by the Court for expert reports and discovery.

The charts attached as Exhibits to these Third Supplemental Invalidity Contentions specifically point out, as non-limiting examples, where the prior art anticipates, either expressly or inherently, and/or renders obvious each element of the Asserted Claims. Shopify asserts that the prior art either anticipates and/or renders obvious the asserted claims as disclosed in its Election of Prior Art. Shopify's citation to exemplary and illustrative portions of the prior art references should not be construed to mean that other portions of the prior art references are not also relevant to the validity of the claims. Other passages of the identified prior art may additionally disclose, either expressly or inherently, information relevant to the validity of one or more elements of the Asserted Claims. Shopify reserves the right to rely on any unquoted portions of the prior art as further evidence of the invalidity of the Asserted Claims. Moreover, Shopify reserves the right to rely on any evidence, including expert testimony, to provide context to or aid in understanding the cited portions of the identified prior art.

Certain pieces of identified prior art inherently or implicitly disclose features of the Asserted Claims. Shopify reserves the right to rely on inherency and/or secondary documents to demonstrate the invalidity of the Asserted Claims based on the inherent or implicit disclosure in these cited prior art references. Further, Shopify may rely on any evidence, including expert testimony, to establish the express, implicit, or inherent disclosure of certain features of the prior art, or the knowledge of a person of ordinary skill in the art, to invalidate the Asserted Claims. Shopify also reserves the right to rely on any evidence, including expert testimony, to prove that the disclosures or prior art cited herein are enabled or to explain the meaning of a term used in

the disclosures or any prior art cited herein.

For the prior art that renders the Asserted Claims obvious, non-limiting examples of the reasons why the prior art renders the asserted claims obvious, including exemplary identification of any such combinations of prior art showing obviousness is provided below. One of ordinary skill in the art would recognize that each charted prior art item can be combined with other charted prior art items when a particular prior art item lacks or does not explicitly disclose an element or feature of an Asserted Claim including for the reasons discussed herein, as well as for reasons to be explained by expert testimony according to the Court's schedule for such disclosures.

The United States Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id*. at 402, 412-13, 419-22, 427-28. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id*. at 417. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id*. at 418. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See Abbott Labs. v. Sandoz, Inc.*, 544 F.3d 1341, 1351 (Fed. Cir.

2008); *TGIP, Inc. v. AT&T Corp.*, 527 F. Supp. 2d 561, 580-81 (E.D. Tex. 2007). "[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" to resolve the question of obviousness. *KSR*, 550 U.S. at 418.

Applying the principles of *KSR* to the Asserted Claims, one of ordinary skill in the art tasked with implementing such a system in accordance with the Asserted Claims would be motivated to investigate the various existing systems, solutions, patents, and other publications, including those identified herein, to address his or her particular needs. The combinations and modifications of the prior art to invalidate the Asserted Claims would have arisen from ordinary innovation, ordinary skill, or common sense and/or would have been obvious to try or otherwise predictable in the fields of website creation. A person of ordinary skill would have had a reasonable expectation of success in combining known prior art to achieved the claimed inventions given that the results achieved in the field of website creation are predictable, since software code implemented according to well-known programming languages, and especially where the Asserted Claims are directed to well-known prior art functionality. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.

In light of the above, and for the reasons stated herein and in the attached claim charts:

- Claims 1-3, 11, and 37 of the '397 patent are invalid for failing to comply with 35 U.S.C. §§ 101, 102, 103, and/or 112.
- Claims 1-3 of the '168 patent are invalid for failing to comply with 35 U.S.C. §§ 101, 102, 103, and/or 112.
- Claims 1, 12, and 22 of the '755 patent are invalid for failing to comply with 35

U.S.C. §§ 101, 103, and/or 112.

- Claims 1, and 13 of the '287 patent are invalid for failing to comply with 35 U.S.C. §§ 101, 103, and/or 112.
- Claims 1, 17, and 19 of the '044 patent are invalid for failing to comply with 35 U.S.C. §§ 101, 103, and/or 112.

II. U.S. PATENT NO. 6,546,397

A. 35 U.S.C. §§ 102 and 103: Anticipation and Obviousness

Shopify identifies the following prior art now known to it that anticipates or renders obvious certain claims of the '397 patent (the "'397 Asserted Claims"), either expressly or inherently as understood by a person having ordinary skill in the art, as demonstrated in the accompanying charts. Each of these prior art patents, publications, and systems anticipates and/or renders obvious the asserted claims. In some instances, Shopify has treated certain prior art as anticipating, where certain elements are inherently present based at least on Express Mobile's apparent claim constructions in Express Mobile's infringement contentions.

The following references and systems[1] are prior art under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). The asserted basis for invalidity is disclosed in the table below.

TABLE 1: INVALIDATING PRIOR ART FOR THE '397 PATENT

REFERENCE	PRIOR ART BASIS	ASSERTED BASIS FOR INVALIDITY
U.S. Patent No. 6,230,174 ("Berger")	102(e)	Obviousness ("O")
U.S. Patent No. 6,185,587 ("Bernardo")	102(e)	Anticipation

[1] To the extent that a system anticipates a claim, the underlying references and admitted prior art also anticipate and/or render the claim obvious alone or in combination with other references.

		("A")[2] / O
Z. Yan and K. Zhang, A Visual Programming Tool for User Interface and Web Page Generation (1998) ("Yan")	102(a) and/or (b)	A/O
U.S. Patent No. 6,141,018 ("Beri")	102(e)	O
FrontPage 2000, Microsoft Corporation ("FrontPage")	102(a) and/or (b)	A/O
M. Gaedke et al., *Web Content Delivery to Heterogeneous Mobile Platforms*, Proceedings of the Workshops on Data Warehousing and Data Mining: Advances in Database Technologies (Nov. 19-20, 1998) ("Gaedke")	102(a) and/or (b)	O
U.S. Patent No. 6,313,835 ("Gever")	102(e)	A/O
U.S. Patent No. 6,343,302 ("Graham")	102(e)	A/O
U.S. Patent No. 6,175,842 ("Kirk")	102(e)	A/O
T. Kopetzky & M. Muhlhauser, *Visual preview for link traversal on the World Wide Web*, Computer Networks 31 ("Kopetzky")	102(a) and/or (b)	O
PCT International Publ. No. WO 98/20434 ("Lenz")	102(a) and/or (b)	A/O
S. Liew, et al., *INTELLECT: A System for Authoring, Distributing, and Presenting Multimedia Contents over the Internet*, IEEE Int'l Conference on Multimedia Computing and Systems (June 7-11, 1999) ("Liew")	102(a) and/or (b)	O
U.S. Patent No. 6,369,821 ("Merrill")	102(e)	O
A. Müller, et al., *Towards the Virtual Internet Gallery*, IEEE International Conference on Multimedia Computing and Systems (June 7-9, 1999) ("Müller")	102(a) and/or (b)	A/O
NetObjects Fusion 4.0 ("NetObjects")	102(a) and/or (b)	A/O
Netscape Composer, by Netscape Communications Corporation ("Netscape Composer")	102(a) and/or (b)	A/O
V. Quint & I. Vatton, *An Introduction to Amaya*, W3 Consortium (Feb. 20, 1997) ("Quint")	102(a) and/or (b)	O
R. Guetari, et al., *Amaya: an Authoring Tool for the Web*, Proceedings of the 5th Maghrebian Conference on Software Engineering and Artificial Intellegence	102(a) and/or (b)	O

[2] Shopify identifies "Anticipation" where Shopify asserts the reference is anticipatory for at least one Asserted Claim. Additional detail regarding whether a claim is anticipatory can be found in the charts attached to Shopify's Initial Invalidity Contentions. Where citations to a reference for at least one claim element for a given claim are not included, Shopify does not assert anticipation for that claim, and instead Shopify asserts the reference renders that limitation obvious, and the claim obvious, either in light of the reference alone, in light of the knowledge of an ordinary artisan, or in combination with other prior art as described in more detail in these contentions. Shopify reserves the right to amend, supplement, and/or modify these disclosures consistent with the Delaware Default Standard and the Scheduling Order entered in this case.

(1998) ("Quint1")		
B. Sawyer & D. Greely, *Creating GeoCities Websites*, Muska & Lipman Publishing (1999) ("Sawyer")	102(a) and/or (b)	A/O
P. Selfridge & T. Kirk, *Cospace: Combining Web Browsing and Dynamically Generated, 3D, Multiuser Environments*, AT&T Labs. (Spring 1999) ("Selfridge")	102(a) and/or (b)	A/O
U.S. Patent Appl. Publ. No. 2002/0091725 ("Skok")	102(e)	A/O
F. Tamiosso, et al., *Building Interactive Animations using VRML and Java*, Brazilian Symposium on Computer Graphics and Image Processing (Oct. 14-17, 1997) ("Tamiosso")	102(a) and/or (b)	O
Silverstream System, by Silverstream Software, Inc. ("Silverstream")	102(a) and/or (b)	A/O
A. Crespo and E. Bier, *WebWriter: A Broswer-Based Editor for Constructing Web Applications*, Fifth Annual World Wide Web Conference (May 6-10, 1996) ("WebWriter I") and A. Crespo et al., *Responsive Interaction for a Large Web Application*, 29 Computer Networks and ISDN Systems 8-13, 1507-17 (Sept. 1997) ("WebWriter II," collectively with Web Writer I, "Web Writer")	102(a) and/or (b)	A/O
U.S. Patent No. 6,396,500 ("Qureshi")	102(e)	A/O
Java Studio, by Sun Microsystems ("Java Studio Program") and/or Weaver, L. and Robertson, L., Java Studio By Example, Sun Microsystems Press (1998)	102(a) and/or (b)	A/O
U.S. Patent No. 5,842,020 ("Faustini")	102(a), (b) and/or (e)	A/O
U.S. Patent No. 6,219,680 ("Bernardo '680")	102(e)	A/O
OLAP, Relational and Multidimensional Database Systems, George Colliat ("Colliat")	102(a) and/or (b)	O
U.S. Patent No. 5,905,985 ("Malloy")	102(a) and/or (e)	O
U.S. Patent No. 6,209,029 ("Epstein")	102(e)	A/O
Netscape Communicator System by Netscape Communications Corporation	102(a) and/or (b)	A/O
U.S. Patent No. 6,101,509 ("Hanson")	102(e)	A/O

Charts citing exemplary disclosures of each limitation of each asserted claim in each of the above references may be found as Exhibits A-* to Shopify's Second Supplemental Invalidity Contentions. These invalidity assertions are not an admission by Shopify that any of the accused products are covered by or infringe these claims, particularly when these claims are properly

construed. These invalidity assertions are not an admission that Shopify concedes any claim construction implied or suggested by Express Mobile's Counterclaims or Infringement Contentions.

Shopify reserves the right to identify additional prior art references that, when combined with the prior art, would render the subject matter of the claims obvious. Each anticipatory prior art reference disclosed in the preceding section, either alone or in combination with other prior art, also renders the '397 Asserted Claims invalid as obvious. Each anticipatory prior art reference may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) any of the other anticipatory prior art references, and/or (3) any of the additional prior art identified in this section. Shopify's contention that the anticipatory prior art references may be combined to render the asserted claims of the '397 patent obvious under 35 U.S.C. § 103 is not an admission or suggestion that the references do not independently anticipate or render obvious the asserted claims. Moreover, in addition to the below combinations, one of ordinary skill in the art would have arrived at the claimed invention based on the references and admitted prior art listed in the attached claim charts in combination with the references in this section and its subsections and the natural progression of the field or common sense.

1. Prosecution History and Related Applications

Shopify incorporates by reference the prior art references of record in the prosecution of the '397 patent and related applications, as well as the prior art discussed in the specification of each of these patents. Shopify reserves the right to present additional arguments.

2. Obviousness

A consideration of the *KSR* obviousness factors leads to the conclusion that the '397 patent is invalid for obviousness.

The knowledge of a person of ordinary skill in the art at the time of the alleged invention would have included all prior art, including knowledge of the features of various programming languages available at the time, and a person of ordinary skill in the art would have considered the prior art in view of this background knowledge. This would include, for example, in addition to the references listed in Table 1:

- Cascading Style Sheets, level 1, W3C Recommendation 17 Dec 1996, revised 11 Jan 1999, which was published by W3C at least as early as January 11, 1999 and constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- Cascading Style Sheets, level 1, W3C Recommendation 17 Dec 1996, which was published by W3C at least as early as December 17, 1996 and constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- Cascading Style Sheets, level 2 CSS2 Specification, W3C Recommendation 12 May 1998, which was published by W3C at least as early as May 12, 1998 and constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- Standard ECMA-262, published by ECMA at least as early as June 1997 and constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- Standard ECMA-262 2nd Edition, published by ECMA at least as early as August 1998 and constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- Standard ECMA-262 3rd Edition, published by ECMA at least as early as December 1999 and on information and belief constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- J. Gosling, et al., *The Java Language Specification*, published by Addison-Wesley, which

was published at least as early as 1996 and constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);

- L. Friendly and B. Joy, *The Java Virtual Machine Specificatio*n, published by Addison-Wesley, which was published at least as early as 1997 and constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- *HTML 3.2 Reference Specification*, W3C Recommendation January 14, 1997, which is a specification for HTML 3.2 published by W3C at least as early as January 14, 1997 and which constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- *HTML 4.0 Specification*, W3C Recommendation, revised on April 24, 1998, which is a specification for HTML 4.0 published by W3C at least as early as April 24, 1998 and which constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- V. Piroumian, *Java GUI Development*, Sams (1999) ("Piroumian"), and which constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a);
- J. Zukowski, *Java AWT Reference*, O'Reilly (1997) ("Zukowski"), and which constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b);
- David Flanagan, *Java in a Nutshell*, O'Reilly (1997) and which constitutes prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b); and
- Java and Java Virtual Machines, by Sun Microsystems, which constitute prior art to the Patents-in-Suit under at least 35 U.S.C. §§ 102(a) and/or (b).

In light of this background knowledge and the state of the art, a person of ordinary skill in the art would have been motivated to combine any one of the references in Table 1 with any

other of the references in Table 1 in a manner that renders obvious each asserted claim of the '397 patent. Under *KSR*, 550 U.S. 398, a person of ordinary skill in the art would have perceived a number of motivations to implement such a combination.

As an initial matter, many of the prior art references for the First Set of Patents address the problem of designing software for creating and displaying websites or components of websites, and each of the prior art references listed in Table 1 is at least related to the field of website creation. In addressing the problem of designing software for authoring and displaying websites, one of ordinary skill in the art would have been motivated to combine the teachings of such significant research. For example, a person of ordinary skill would have understood that laymen may not possess knowledge of the programming language(s) that may be used to create websites, and in designing an authoring tool, a person of ordinary skill in the art would have looked to references that disclose simplified or more user-friendly processes for creating and displaying websites. *See, e.g.*, Bernardo at 1:61-67 ("Among the inherent difficulties in creating and maintaining such Web sites is that the HTML used to define the Web pages . . . is difficult to compose and read."); Bernardo '680 at 2:49-55; Faustini at 4:59-67 ("As the Java system and applet creation becomes more widely used, the need to simplify the development of these applications becomes desirable."); Yan at 3 ("A good user interface design should reduce the user's information load and avoid overloading the user's memory, because people are better at recognizing information than recalling information. The user should not be expected to recall a set of complex commands. Instead, a list of commands, options, or data should be presented to the user [Treu 94].").

"WYSIWYG editors" (an acronym for "What-You-See-Is-What-You-Get editors") were a principal prior art tool for providing such a simplified and user-friendly processes for creating

and displaying website content. Indeed, many of the prior art references listed in Table 1 are in the specific field of WYSIWYG webpage editors and/or browser-based WYSIWYG webpage editors, including Java Studio, WebWriter, Graham, Yan, NetObjects, Quint, Quint1, Sawyer and Silverstream. A person of ordinary skill in the art would have recognized that these references all disclose simplified and user-friendly tools for designing and displaying websites and would have looked to any of these references when designing a website authoring tool.

Additionally, a person of ordinary skill designing software tools for creating and displaying websites would have looked to all the teachings of the prior art regarding functionality that a user might wish to integrate into a webpage or to display the webpage, and would have incorporated such functionality into the software to appeal to users. Indeed, many of the prior art references listed in Table 1 describe various components that could be included in websites to provide greater interactivity or an enhanced user experience. For example, Gever teaches the ability to select an animation for inclusion in a web page. Gever at 8:12-19 ("According to the selected category, the user is provided with a list of titles of basic animation sequences. Each of the animation sequences is generated by a respective script, preferably written in the JavaScript language, or as an executable Java program, which is stored on server 26. The user may preview any of the animation sequences on display 22 in order to select an animation sequence which forms a basis of the Web page to be created for the user."); *see also* Tamioso at 1-2 (discussing the use of Java to develop interactive animations); Berger at 2:51-56 (discussing the development of animations for web pages); Beri at 2:40-53 (discussing animated marquees); Merrill at 1:62-2:58 (discussing scripts to control animations). Similarly, Liew teaches a multimedia content-development and deployment platform that could be used to generate web pages with multimedia content such as audio, video, and animation. *See*, *e.g.*, Liew at 63 ("With

reference to Fig. 1, the media-coordination subsystem at the client is responsible for the coordination of the retrieval of multimedia data and their presentation. Media such as text, images, audio, video, animation, etc. are supported."); *see also* Kopetsky at 1526-28 (discussing visual previews of linked content). And Müller likewise discloses a multimedia virtual internet "gallery" through which the user could view three-dimensional representations of artworks for sale. *E.g.*, Müller at 2-8; *see also* Selfridge at 28 (discussing the development of Web-accessible 3D interactive environments). A person or ordinary skill in the art would have been motivated to combine any of these references with one another or with any of the references on website authoring tools in order to create websites (and related authoring tools) with greater interactivity and user appeal.

A person of ordinary skill would also have recognized the need to minimize the size of files required to display a webpage in light of limited user bandwidth, and would have looked to all known techniques and research to address this problem, including the references listed in Table 1. *See, e.g.*, William Stanek, *Java Archives in Java 1.2*, PC Magazine 1999 ("An added bonus of using compressed archive files is that they can greatly improve the performance of applets, and these performance benefits extend to both sides of the client/server Web equation. Compressed archives take up less file space, and your browser can download these archives many times faster than the original uncompressed files. On the Web server, the time savings are also substantial. With separate files, the server generates a separate HTTP transaction for each file. Each transaction uses server resources and can take a few seconds to generate. Thus, by bundling many files into a single file, you can speed up the server's response time and reduce the dreaded wait—and we all hate to wait."); Colliat at 65-67 (discussing a database structure with the advantages of "faster calculation, much less disk space, and less programming effort");

David Flanagan, *Java in a Nutshell*, O'Reilly (1997) at 99-100 ("Prior to Java 1.1, each of these files was loaded through a separate HTTP request, which is fairly inefficient. With Java 1.1, all (or many) of the files an applet needs can be combined into a single JAR file, which an applet viewer or Web browser can download with a single HTTP request. [In addition, a manifest file in the JAR] can be used by the applet viewer or Web browser to verify that the files in the archive have not been corrupted since the JAR was created."); Gaedke at 206 ("Information to be delivered to mobile devices may have to be adapted to bandwidth availability and transmission cost."); Lenz at 1:29-2:4 (claimed invention directed in part to solving the "problem with conventional web sites [that] the size of the data files that need to be downloaded by a user is increasing significantly"). A person of ordinary skill in the art would have been motivated to combine these references with any of the references on website authoring tools or website multimedia content in order to generate websites (and related authoring tools) with better performance in light of internet bandwidth limitations.

A person of ordinary skill would have further recognized the problem of displaying a webpage on devices with disparate display capabilities and browser window sizes, and would have looked to all known techniques and research to address this problem, including the references listed in Table 1. *See, e.g.*, U.S. Patent No. 6,300,947 ("Kanevsky") at 1:18-21 ("If such a web site is accessed from devices with small screens (e.g., palmtops, web phones), only small parts of the web pages can be viewed by users . . . ."); Gaedke at 206 ("PDAs and other mobile devices have very little screen real estate compared to desktop computers."); Qureshi at 3:38-46 ("Although the browser is used to generate a graphical display of objects included in an HTML page, the dimensions of the browser's display window can differ from the dimensions initially coded for the display space of the page. The size of the browser's display window can

vary according to the resolution of the video display or the window dimensions that are selected by a user."); *see also* Selfridge at 27 ("Cospace sits 'on top' of the Web . . . . It does so in a way that is transparent to the Web sites themselves. This means that Web sites are not required to be modified in any way."); Kirk at Abstract (similarly discussing platform-independent "cospace" content). A person of ordinary skill in the art would have been motivated to combine these references with any of the references on website authoring tools or website content and file size in order to generate websites (and related authoring tools) with better and more user-friendly cross-platform performance.

Additionally, it would have been obvious to implement any of the features disclosed in the references in Table 1 in a platform-independent (as opposed to platform-dependent) manner. For example, by the time of the alleged invention, the use of Java and Java virtual machines was widespread, and a person of ordinary skill in the art would have recognized that he or she could develop content a single time in Java (such as a single Java applet) to be deployed through a website to different users, without the need to develop multiple versions of the content for the various operating systems and hardware that different users may have. Indeed, at the time of the alleged invention, authoring tools such as the SilverStream system supported this type of "write-once" approach in a simplified and more user-friendly environment compared to creating web pages with Java in the first instance. *E.g.*, SilverStream Website, previously available at http://silverstream.com:80/products/demo/screengrabdemo/demo.html, at BC_EM589, BC_EM594 (noting that "[Java] can produce sophisticated applications that run in any Web browser, on all platforms," and that SilverStream supports the development of these applications "in a single, integrated application environment that, for the first time, unifies all Web application development and deployment functions in a complete, consistent, integrated

solution"). Such a "write-once" approach would have been obvious to a person of ordinary skill in the art because it was a conventional and routine strategy for developing website content in a more efficient manner.

Among the references listed in Table 1, some pieces of prior art also refer to or discuss other pieces of prior art, illustrating the close technical relationship among the prior art and further confirming that a person of ordinary skill in the art would have been motivated to combine the references listed in Table 1. For example, Skok and other references documenting the Silverstream system cite to and discuss the Netscape Composer system. *See*, *e.g.*, Skok at [0035]. As another example, Bernardo cites a number of references on the FrontPage system by Microsoft Corporation.

Moreover, additional *KSR* factors support the conclusion that a person of ordinary skill in the art would have been motivated to combine the prior art references in Table 1 in a manner that renders obvious the claimed invention of the '397 patent. For example, because all of the references describe computer software or are implemented as computer software (which is generally modular and can be easily modified and rearranged), the combination of these references would have represented the combination of known prior art elements or the simple substitution of one prior art element for another, and such a combination would have yielded predictable results. Indeed, this is particularly true for the references listed in Table 1, many of which relate to browser-based website generation, a technological area where interoperability is a key consideration (and a person of ordinary skill in the art would therefore understand that the references are compatible and combinable with one another). Additionally, a person of ordinary skill in the art would have considered it obvious to try implementing many of these combinations, given the finite number of available systems for WYSIWYG creation of websites

in the late 1990's. Thus, as described in the examples above, a person of ordinary skill in the art would have perceived varied and compelling motivations to combine any of the references in Table 1 in order to generate improved websites and improved website authoring tools at the time of the alleged invention.

B. 35 U.S.C. § 112: Written Description, Enablement, and Indefiniteness

The '397 Asserted Claims are invalid for lack of written description and enablement under 35 U.S.C. § 112, ¶ 1, and for failing to particularly point out and distinctly claim the subject matter that the applicant regards as his invention under 35 U.S.C. § 112, ¶ 2. Shopify reserves the right to supplement these Invalidity Contentions to further identify bases for invalidity under 35 U.S.C. § 112, ¶¶ 1 & 2.

1. Written Description

To satisfy the written description requirement, the specification must demonstrate that the patentee possessed the full scope of the claimed invention as of the filing date of the patent. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc); *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1376-79 (Fed. Cir. 2009); *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1344-47 (Fed. Cir. 2005). If the specification demonstrates that the inventor possessed only some, but not all, embodiments encompassed by a claim, the claim is invalid under the written-description requirement. *ICU*, 558 F.3d at 1376-79 (affirming summary judgment that claims to medical valves were invalid where claims encompassed both spiked and spikeless valves but specification described only spiked valves); *LizardTech*, 424 F.3d at 1337-39 (affirming summary judgment that broad claims to seamless image compression were invalid where specification described only one method of seamless image compression). "[T]he hallmark of written description is disclosure." *Ariad*, 598 F.3d at 1351. Thus, the written description test requires "an objective inquiry into the four corners of the

specification from the perspective of a person of ordinary skill in the art." *Id.* A specification that merely renders obvious the full scope of the claimed invention does not satisfy the written description requirement. *Id.*; *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997) ("It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose.").

The intrinsic record demonstrates that the inventor did not possess the full scope of the inventions as claimed in the '397 Asserted Claims, including but not limited to the use of any virtual machine for the display of at least a portion of a webpage at the time of filing. The '397 Asserted Claims on their face purport to cover the use of ***any*** virtual machine for the display of at least a portion of a webpage. In its Infringement Contentions, Express Mobile appears to argue that Shopify infringes the '397 patent on the basis that a browser engine qualifies as, or contains, the claimed virtual machine. *See* Express Mobile's '397 Infringement Contentions p. 1 ("All of these well-known modern browsers rely on engines, such as the JavaScript engine and the browser layout and rendering engine, that fit the definition of a virtual machine, which interpret and execute JavaScript, CSS, HTML, and other code to render web pages on a computer.") However, the intrinsic record demonstrates that the inventor lacked possession of the full scope of the inventions as claimed at the time of the filing because it is clear that only a Java Virtual Machine was actually used to implement the invention. The specification references the phrase "virtual machine" only once and only in the context of a "Java Virtual Machine." Furthermore, every embodiment in the specification makes use of a Java virtual machine, as evidenced by the reference to .class files, which are specific to Java Virtual Machines. Nothing in the intrinsic record refers to the use of a virtual machine other than a Java Virtual Machine.

Further, nothing in the specification indicates that patentee invented a browser including a virtual machine for interpreting and rendering HTML and JavaScript. Instead, it would have been apparent to one skilled in the art, based on the specification, that the inventor regarded the invention as using a virtual machine distinct from and in addition to the browser. *See e.g.*, '397 patent at 3:4-6 (describing communication between JAVA and HTML), 22:66-23.6 (describing the essentiality of overcoming the technical challenge of enabling JAVA to communicate with JavaScript), 35:34-38, 42:42-44 (referring to a browser and a JAVA method in the alternative). The specification does not describe a virtual machine for processing HTML and JavaScript interpreted languages.

The '397 Asserted Claims, as interpreted and applied by Express Mobile in its Infringement Contentions, fail to meet the written description requirement because the inventor did not possess the full scope of the inventions claimed in the '397 Asserted Claims at the time of filing.

As described above, despite purporting to claim the use of any virtual machine for the display of at least a portion of a webpage, it would be apparent to one of skill in the art, based on the specification, that the invention set forth in a claim is not what the inventor regarded as his invention, such that the Asserted Claims are invalid under Paragraph 1 of § 112. The claim term "virtual machine" lacks written description.

2. Enablement

The '397 Asserted Claims are invalid for lack of enablement because the specification of the '397 patent fails to teach one of skill in the art to make and use the full scope of the invention of the '397 Asserted Claims without undue experimentation. The specification includes no description of a virtual machine to interpret HTML and JavaScript. It also does not explain to one of ordinary skill how he or she could implement such a virtual machine. In addition, the

specification does not describe nor enable one of ordinary skill to implement a virtual machine internal to a browser, rather than in communication with a browser, such as for executing Java applets. The full scope of the '397 patent encompasses the full range of virtual machines available at the time but the invention could only be practiced with a Java Virtual Machine, making it impossible to make or use the full scope of the invention without undue experimentation. The claim term "virtual machine" lacks enablement.

Claim 37 is invalid for lack of enablement with regard to the term "contemporaneously." The specification does not enable one of ordinary skill in the art at the time of the alleged invention to make or use the alleged invention. For example, the specification does not explain how to generate the display in accordance with said assembly of settings contemporaneously with the acceptance thereof. The claim term "contemporaneously" lacks enablement.

3. Indefiniteness

35 U.S.C. § 112, ¶ 2 requires the patent specification to "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." A patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910-11 (2014).

Claim11 is indefinite. The claim term "said build engine" has no antecedent basis. Express Mobile's attempt to correct this via a certificate of correction is invalid. *See* 35 U.S.C. § 255 (only allowing certificates of correction for errors which are "of a clerical or typographical nature, or of minor character").

Claim 11 is indefinite. The claim term "means for storing information representative of selected style in said database" is subject to interpretation under 35 U.S.C. § 112, ¶ 6 because it

invokes the phrase "means" and the claim fails to recite sufficiently definite structure so as to rebut the presumption. The specification, however, does not disclose sufficient structure corresponding to the claimed function. As a result, claims 9 and 11-13 are indefinite under 35 U.S.C. § 112, ¶ 2. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349-52 (Fed. Cir. 2015).

Claim 37 is indefinite. The claim term "an interface configured for building a website through control of website elements, said interface being operable through the browser on the computer to . . ." carry out the specified functions is subject to interpretation under 35 U.S.C. § 112, ¶ 6 because it uses the term "interface," which does not have sufficiently definite meaning to one of ordinary skill in the art. The specification, however, does not disclose sufficient structure corresponding to the claimed functions. As a result, claim 37 is indefinite under 35 U.S.C. 112, ¶ 2. *See Williamson*, 792 F.3d at 1349-52.

C. 35 U.S.C. § 101: Abstract Idea and Lack of Utility

35 U.S.C. § 101 provides as follows: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." The Supreme Court has "interpreted § 101 and its predecessors . . . for more than 150 years" to "contain[] an important implicit exception: Laws of nature, natural phenome, and abstract ideas are not patentable." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014) (quoting *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013)).

The *Alice* framework applies a two-step analysis for determining patent eligibility: "First, we determine whether the claims at issue are directed to one of those patent ineligible concepts. If so, we then ask, '[w]hat else is there in the claims before us?' To answer that question, we consider the elements of each claim both individually and 'as an ordered combination' to

determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application. We have described step two of this analysis as a search for an 'inventive concept'—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself." *Alice*, 134 S. Ct. at 2355.

"[R]elying on a computer to perform routine tasks more quickly or more accurately is insufficient to render a claim patent eligible." *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015). "And after *Alice*, there can remain no doubt: recitation of generic computer limitations does not make an otherwise ineligible claim patent-eligible. The bare fact that a computer exists in the physical rather than purely conceptual realm is beside the point." *DDR Holdings, LLC v. Hotels.com, LP*, 773 F.3d 1245, 1256 (Fed. Cir. 2014) (citation and quotation marks omitted). "Adding routine additional steps such as updating an activity log, requiring a request from the consumer to view the ad, restrictions on public access, and use of the internet does not transform an otherwise abstract idea into patent-eligible subject matter." *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014).

Independent claims 1, 2, and 37 of the '397 patent are directed to the abstract idea of generating and displaying elements that appear in the manner and format selected by a user. This type of WYSIWYG-get functionality is something that humans have been performing by hand for decades—for example, newspaper or magazine layouts. Moving it to a computer-based or Internet setting utilizes only conventional computer technologies and lacks any inventive concept. For example, humans could readily prepare code for the display of websites using general purpose computer hardware and software.

The '397 patent admits that it was well known that users could prepare code for

generating web pages accessible by browsers, either by coding the pages manually, or by operating a prior art product that could generate such code. '397 patent at 5:40-47; Fig. 1. The code could be generated according to known programming languages and protocols that the '397 patent assumes the existence of, such as "full featured programming language[s]" like Java, or by, for example, HTML and HTML extensions (such as Dynamic HTML, JavaScript and Cascading Style Sheets). '397 patent at 1:52-67. Parallel admissions are found in the '168 patent.

The asserted dependent claims simply add routine and conventional steps, and none of the limitations of each claim considered together provide an inventive concept that transforms any claim into patent eligible subject matter. As reflected in the Exhibits hereto, the claims are directed to known functionality. Thus, the asserted claims of the '397 patent are directed to patent ineligible subject matter and are invalid under § 101.

III. U.S. PATENT NO. 7,594,168

The specification of the '168 patent is substantively identical to that of the '397 patent and the claims of the Patents substantially overlap. Shopify incorporates by reference as if fully stated herein their contentions set forth above with respect to the '397 patent and further state as follows:

A. 35 U.S.C. §§ 102 and 103: Anticipation and Obviousness

Shopify identifies the following prior art now known to them that anticipates or renders obvious claims of the '168 patent (the "Asserted '168 Claims"), either expressly or inherently as understood by a person having ordinary skill in the art, depending on the Court's interpretation of the claims, as demonstrated in the accompanying charts. Each of these prior art patents, publications, and systems anticipates and/or renders obvious the asserted claims. In some instances, Shopify has treated certain prior art as anticipating, where certain elements are inherently present based at least on Express Mobile's apparent claim constructions in Express

Mobile's infringement contentions.

The following references and systems[3] are prior art under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). The asserted basis for invalidity is disclosed in the table below.

TABLE 2: INVALIDATING PRIOR ART FOR THE '168 PATENT

REFERENCE	PRIOR ART BASIS	ASSERTED BASIS FOR INVALIDITY
NetObjects Fusion 4.0 ("NetObjects")	102(a) and/or (b)	A/O
B. Sawyer & D. Greely, *Creating GeoCities Websites*, Muska & Lipman Publishing (1999) ("Sawyer")	102(a) and/or (b)	A/O
U.S. Patent No. 6,230,174 ("Berger")	102(e)	O
U.S. Patent No. 6,141,018 ("Beri")	102(e)	O
U.S. Patent No. 6,185,587 ("Bernardo")	102(e)	A/O
FrontPage 2000, Microsoft Corporation ("FrontPage")	102(a) and/or (b)	A/O
U.S. Patent No. 6,313,835 ("Gever")	102(e)	A/O
U.S. Patent No. 6,343,302 ("Graham")	102(e)	A/O
U.S. Patent No. 6,175,842 ("Kirk")	102(e)	A/O
T. Kopetzky & M. Muhlhauser, *Visual preview for link traversal on the World Wide Web*, Computer Networks 31 (1999) 1525-1532 ("Kopetzky")	102(a) and/or (b)	O
PCT International Pub. No. WO 98/20434 ("Lenz")	102(a) and/or (b)	A/O
S. Liew, et al., *INTELLECT: A System for Authoring, Distributing, and Presenting Multimedia Contents over the Internet*, IEEE Int'l Conference on Multimedia Computing and Systems (June 7-11, 1999) ("Liew")	102(a) and/or (b)	O
U.S. Patent No. 6,369,821 ("Merrill")	102(e)	O
A. Müller, et al., *Towards the Virtual Internet Gallery*, IEEE International Conference on Multimedia Computing and Systems (June 7-9, 1999) ("Müller")	102(a) and/or (b)	A/O
Netscape Composer, by Netscape Communications Corporation ("Netscape Composer")	102(a) and/or (b)	A/O
Vincent Quint & Irene Vatton, An Introduction to	102(a) and/or (b)	O

[3] To the extent that a system anticipates a claim, the underlying references and admitted prior art also anticipate and/or render the claim obvious alone or in combination with other references.

Amaya, W3 Consortium (Feb. 20, 1997) ("Quint")		
R. Guetari, et al., *Amaya: an Authoring Tool for the Web*, Proceedings of the 5th Maghrebian Conference on Software Engineering and Artificial Intelligence (1998) ("Quint1")	102(a) and/or (b)	O
P. Selfridge & T. Kirk, *Cospace: Combining Web Browsing and Dynamically Generated, 3D, Multiuser Environments*, AT&T Labs (Spring 1999) ("Selfridge")	102(a) and/or (b)	A/O
Silverstream System, by Silverstream Software, Inc. ("Silverstream")	102(a) and/or (b)	A/O
U.S. Patent Pub. No. 2002/0091725 ("Skok")	102(e)	A/O
A. Crespo and E. Bier, *WebWriter: A Browser-Based Editor for Constructing Web Applications*, Fifth Annual World Wide Web Conference (May 6-10, 1996) ("WebWriter I") and A. Crespo et al., *Responsive Interaction for a Large Web Application*, 29 Computer Networks and ISDN Systems 8-13, 1507-17 (Sept. 1997) ("WebWriter II," collectively with Web Writer I, "Web Writer")	102(a) and/or (b)	A/O
Z. Yan and K. Zhang, A Visual Programming Tool for User Interface and Web Page Generation (1998) ("Yan")	102(a) and/or (b)	A/O
U.S. Patent No. 6,396,500 ("Qureshi")	102(e)	O
Java Studio Program, by Sun Microsystems, Inc. and/or Weaver, L. and Robertson, L., *Java Studio By Example*, Sun Microsystems Press (1998) ("Java Studio")	102(a) and/or (b)	A/O
U.S. Patent No. 5,842,020 ("Faustini")	102(a), (b), and/or (e)	A/O
U.S. Patent No. 6,209,029 ("Epstein")	102(e)	A/O
OLAP, Relational and Multidimensional Database Systems, George Colliat ("Colliat")	102(a) and/or (b)	O
Netscape Communicator System by Netscape Communications Corporation	102(a) and/or (b)	A/O
U.S. Patent No. 6,101,509 ("Hanson")	102(e)	A/O

Charts citing exemplary disclosures of each limitation of each asserted claim in each of the above references may be found in Exhibits B-* to Shopify's Second Supplemental Invalidity

Contentions. These invalidity assertions are not an admission by Shopify that any of the accused products are covered by or infringe these claims, particularly when these claims are properly construed. These invalidity assertions are not an admission that Shopify concedes any claim construction implied or suggested by Express Mobile's Counterclaims or Infringement Contentions.

Shopify reserves the right to identify additional prior art references that, when combined with the prior art, would render the subject matter of the claims obvious. Each anticipatory prior art reference disclosed in the preceding section, either alone or in combination with other prior art, also renders the '168 Asserted Claims invalid as obvious. Each anticipatory prior art reference may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) any of the other anticipatory prior art references, and/or (3) any of the additional prior art identified in this section. Shopify's contention that the anticipatory prior art references may be combined to render the asserted claims of the '168 patent obvious under 35 U.S.C. § 103 is not an admission or suggestion that the references do not independently anticipate or render obvious the asserted claims. Moreover, in addition to the below combinations, one of ordinary skill in the art would have arrived at the claimed invention based on the references and admitted prior art listed in the attached claim charts in combination with the references in this section and its subsections and the natural progression of the field or common sense.

Additionally, the asserted claims of the '168 patent are invalid for obviousness-type double patenting, because the '168 patent is a continuation of the '397 patent and the asserted claims of the '168 patent recite only obvious variants of the asserted claims of the '397 patent.

1. Prosecution History and Related Applications

Shopify incorporates by reference the prior art references of record in the prosecution of

the ’168 patent and related applications, as well as the prior art discussed in the specification of each of these patents. Shopify reserves the right to present additional arguments.

2. Obviousness

Shopify hereby incorporates by reference the content of Section II.A.2 of these invalidity contentions. For the reasons set forth in that Section, a person of ordinary skill in the art would have been motivated to combine any one of the references in Table 2 with any other of the references in Table 2 in a manner that renders obvious the asserted claims of the ’168 patent.[4]

B. 35 U.S.C. § 112: Written Description, Enablement, and Indefiniteness

1. Written Description

Independent claim 1 of the ’168 patent, and each of its dependent claims, is invalid for lack of written description with respect to the term “wherein each web page is defined entirely by each of the plurality of objects comprising that web page and the style associated with the object.” A person of ordinary skill would understand that no web page is defined entirely by the objects comprising the web page, but depends upon, among other things, code such as HTML code that does not define an object. The specification does not describe any new programming language or scheme that creates web pages defined entirely by web page objects and their associated styles. Accordingly, the description in the specification does not allow a person of ordinary skill in the art to recognize that the applicant invented what is claimed.

[4] The arguments in Section II.A.2 (which section pertains to the ’397 patent) apply equally to the ’168 patent, since the references presented in these contentions as invalidating prior art with respect to the ’168 patent (Table 2) are also presented as invalidity prior art for the ’397 patent (Table 1). Moreover, the ’397 patent and ’168 patent share a specification and are directed to highly similar claimed inventions, and a person of ordinary skill in the art would have been motivated to combine the same prior art references in a manner that renders obvious both claimed inventions.

2. Enablement

Independent claim 1 of the '168 patent, and each of its dependent claims, is invalid for lack of enablement with respect to the term "wherein each web page is defined entirely by each of the plurality of objects comprising that web page and the style associated with the object." A person of ordinary skill would understand that no web page is defined entirely by the "objects comprising the web page," but depends upon, among other things, code such as HTML code that does not define an object. The specification does not describe any new programming language or scheme that creates web pages defined entirely by web page objects and their associated styles. Accordingly, the description in the specification does not enable one of ordinary skill in the art at the time of the alleged invention to make or use the alleged invention.

Independent claim 1 of the '168 patent, and each of its dependent claims, is invalid lack of enablement with regard to the term "a server comprising a build engine configured to . . ." This single-means claim violates the rule against functional claiming set forth in *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1 (1946). *See In re Hyatt*, 708 F.2d 712 (1983) (holding that a claim for a "Fourier transform processor . . . comprising incremental means for incrementally generating the Fourier transformed incremental output signals in response to the incremental input systems" was an invalid single-means claim as the specification failed to provide an enabling description commensurate in scope with the claim).

3. Indefiniteness

Independent claim 1 of the '168 patent, and each of its dependent claims, is invalid as indefinite with regard to the terms "style" and "style data." The meaning of the term is not reasonably certain when read in view of the intrinsic evidence, as a person of ordinary skill would not know what "style" or "style data" refers to.

Claim 2 is invalid as indefinite with regard to the term "child." The meaning of the term

is not reasonably certain when read in view of the intrinsic evidence, as a person of ordinary skill would not know what "child" refers to. For example, the claim does not specify what "a child" is a child of.

Claims 2 and 3 are invalid as indefinite with regard to the terms "child button" and "child image objects." The meaning of the terms is not reasonably certain when read in view of the intrinsic evidence, as a person of ordinary skill would not know what "child button" or "child image object" refers to. For example, the claim does not specify what "child button and child image objects" are children of.

C. 35 U.S.C. § 101: Abstract Idea and Lack of Utility

Shopify incorporates the discussion of § 101, above, in its entirety by reference here. *See* Part II.C, *supra*.

Additionally, independent claim 1 of the '168 patent is directed to the abstract idea of generating and displaying elements that appear in the manner and format selected by a user, as discussed above with respect to the '397 patent. This type of WYSIWYG functionality has been performed by hand by humans for decades, for example in the context of newspaper or magazine layouts. Simply moving it to a computer-based or Internet setting utilizes only conventional computer technologies and lacks any inventive concept. For example, humans could prepare code for the display of websites using general purpose computer hardware and software. The '168 patent admits that it was well known that users could prepare code for generating web pages accessible by browsers, either by coding the pages manually, or by operating a prior art product that could generate such code. '168 patent at 5:36-43; Fig. 1. The code could be generated according to known programming languages and protocols that the '168 patent assumes the existence of, such as "full featured programming language[s]" like Java, or by, for example, HTML and HTML extensions (such as Dynamic HTML, JavaScript and Cascading Style

Sheets). ’168 patent at 1:61-2:8.

The asserted dependent claims simply add more routine steps, and none of the limitations of each claim considered together provide an inventive concept that transforms any claim into patent eligible subject matter. As reflected in the Exhibits hereto, the claims are directed to known functionality. Thus, the asserted claims of the ’168 patent are directed to patent ineligible subject matter and are invalid under § 101.

IV. U.S. PATENT NO. 9,063,755

A. 35 U.S.C. §§ 102 and 103: Anticipation and Obviousness

Shopify identifies the following prior art now known to them anticipating or rendering obvious claims of the ’755 patent (the “’755 Asserted Claims”), either expressly or inherently as understood by a person having ordinary skill in the art, depending on the Court’s interpretation of the claims, as demonstrated in the accompanying charts. Each of these prior art patents, publications, and systems anticipates and/or renders obvious the ’755 Asserted Claims. In some instances, Shopify has treated certain prior art as anticipating, where certain elements are inherently present based at least on Express Mobile’s apparent claim constructions in Express Mobile’s infringement contentions.

The following references and systems[5] are prior art under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). The asserted basis for invalidity is disclosed in the table below.

TABLE 3: INVALIDATING PRIOR ART FOR THE ’755, ’287, AND ’044 PATENTS

REFERENCE	PRIOR ART BASIS	ASSERTED BASIS FOR INVALIDITY
C. Phanouriou, *UIML: a device-independent user interface markup language*, Diss. Virginia	102(a) and/or (b)	A/O

[5] To the extent that a system anticipates a claim, the underlying references and admitted prior art also anticipate and/or render the claim obvious alone or in combination with other references.

Tech (2000) ("Phanouriou")		
Harmonia, by Harmonia Inc. ("Harmonia")	102(a) and/or (b)	A/O
U.S. Patent No. 6,990,654 ("Carroll")	102(a), (b), and/or (e)	A/O
U.S. Patent No. 7,266,370 and U.S. Patent Appl. Publ. No. 2006/0063518 ("Paddon")	102(a), (b), and/or (e)	A/O
U.S. Patent No. 6,005,568 ("Simonoff")	102(a), (b), and/or (e)	A/O
BlackBerry MDS Studio, by Research In Motion, Ltd. ("BlackBerry MDS Studio")	102(a) and/or (b)	A/O
U.S. Patent No. 8,667,415 ("Rudolph")	102(e)	A/O
EP 1 698 984 and/or U.S. Patent Appl. Publ. No. 2006/0200749 ("Shenfield")	102(a), (b), and/or (e)	A/O
U.S. Patent Appl. Publ. No. 2005/0193380 ("Shenfield II")	102(a), (b), and/or (e)	O
U.S. Patent Appl. Publ. No. 2006/0248121 ("Shenfield III")	102(a), (b), and/or (e)	A/O
U.S. Patent Appl. Publ. No. 2005/0125771 ("Shenfield IV")	102(a), (b), and/or (e)	A/O
U.S. Patent Appl. Publ. No. 2005/0273705 ("McCain")	102(a), (b), and/or (e)	A/O
U.S. Patent Appl. Publ. No. 2007/0118844 ("Huang")	102(a), (b), and/or 102(e)	A/O
U.S. Patent Appl. Publ. No. 2004/0243931 ("Stevens")	102(a), (b), and/or (e)	A/O
U.S. Patent Appl. Publ. No. 2009/0013310 including U.S. Provisional Pat. Appl. No. 60/969,428 ("Arner")	102(e)	A/O
WordPress and Plugins	102(a), (b)	A/O

Charts citing exemplary disclosures of each limitation of each asserted claim in each of the above references may be found in Exhibits C-* to Shopify's Second Supplemental Invalidity Contentions. These invalidity assertions are not an admission by Shopify that any of the accused products are covered by or infringe these claims, particularly when these claims are properly construed. These invalidity assertions are not an admission that Shopify concedes any claim construction implied or suggested by Express Mobile's Counterclaims or Infringement

Contentions.

Shopify reserves the right to identify additional prior art references that, when combined with the prior art, would render the subject matter of the claims obvious. Each anticipatory prior art reference disclosed in the preceding section, either alone or in combination with other prior art, also renders the '755 Asserted Claims invalid as obvious. Each anticipatory prior art reference may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) any of the other anticipatory prior art references, and/or (3) any of the additional prior art identified in this section. Shopify's contention that the anticipatory prior art references may be combined to render the asserted claims of the '755 patent obvious under 35 U.S.C. § 103 is not an admission or suggestion that the references do not independently anticipate or render obvious the asserted claims. Moreover, in addition to the below combinations, one of ordinary skill in the art would have arrived at the claimed invention based on the references and admitted prior art listed in the attached claim charts in combination with the references in this section and its subsections and the natural progression of the field or common sense.

In addition, Shopify reserves the right to raise the argument that the '755 Asserted Claims are invalid due to Express Mobile selling, offering to sell, or otherwise making available an embodying product more than one year prior to the priority date to which the '755 Asserted Claims are entitled. Express Mobile has failed to produce information and documents within Express Mobile's custody or control required to make this argument. Shopify will supplement this disclosure when Express Mobile produces the required information.

1. Prosecution History and Related Applications

Shopify incorporates by reference the prior art references of record in the prosecution of the '755 patent and related applications, as well as the prior art discussed in the specification of

each of these patents. Shopify reserves the right to present additional arguments.

2. Obviousness

A consideration of the *KSR* obviousness factors, discussed above, leads to the conclusion that the '755 patent is invalid for obviousness.

The knowledge of a person of ordinary skill in the 2008 timeframe would have included all prior art, including knowledge of the features of various programming languages available at the time of the invention, and a person of ordinary skill in the art would have considered the prior art in view of this background knowledge. This would include, in addition to all of the references listed in Parts II.A, II.B, and IV.A, *supra*, for example:

- U.S. Patent No. 6,546,397 ("Rempell"), which was filed on December 2, 1999 and issued on April 8, 2003 and constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(b)/(e);
- U.S. Patent Appl. Publ. No. 2004/0017392 ("Welch"), which was filed on April 30, 2003 and which published on January 29, 2004, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- U.S. Patent No. 7,596,622 ("Owen"), which was filed on February 24, 2004 and which issued on September 29, 2009, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. § 102(e);
- U.S. Patent Appl. Publ. No. 2005/0193135 ("Owen II"), which was filed on February 24, 2004 and published on September 1, 2005, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);

- U.S. Patent Appl. Publ. No. 2005/0149935 ("Benedetti"), which was filed on June 30, 2004 and published on July 7, 2005, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2005/0192984 ("Shenfield V"), which was filed on January 24, 2005 and published on July 27, 2006, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2007/0198968 ("Shenfield VI"), which was filed on February 2, 2006 and published on August 23, 2007, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2006/0206890 ("Shenfield VII"), which was filed on March 10, 2005 and published on September 14, 2006, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2006/0236302 ("Shenfield VIII"), which was filed on April 15, 2005 and published on October 19, 2006, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2006/0168355 ("Shenfield IX"), which was filed on January 24, 2005 and published on July 27, 2006, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2004/0215700 ("Shenfield X"), which was filed on December 23, 2003 and published on October 28, 2004, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);

- U.S. Patent Appl. Publ. No. 2004/0199614 ("Shenfield XI"), which was filed on December 23, 2003 and published on October 28, 2004, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2006/0253548 ("Shenfield XII"), which was filed on April 18, 2006 and published on November 9, 2006, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- BlackBerry MDS Studio, by Research In Motion, Ltd., which was made public by no later than September 2007 and at least as early as March 2006, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b) ("BlackBerry MDS Studio");
- U.S. Patent Appl. Publ. No. 2007/0118844 ("Huang"), which was filed on November 23, 2005 and published on May 24, 2007, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2002/0122054 ("Hind"), which was filed on March 2, 2001 and published on September 5, 2002, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b) and/or (e);
- U.S. Patent No. 9,135,227 ("Warila"), which was filed on August 8, 2014 and claims priority to an application filed on September 10, 2003, and issued on September 15, 2015, which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. § 102(e);

- U.S. Patent Appl. Publ. No. 2004/0243931 ("Stevens"), which was filed on July 1, 2002, and published on December 2, 2004, which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and (e);
- WO Patent Publ. No. 03/081389 ("Greensage"), which was filed on March 20, 2002 and published on October 2, 2003, which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and (b);
- U.S. Patent Appl. Publ. No. 2009/0013310 and/or U.S. Provisional Pat. Appl. No. 60/969,428 ("Arner"), which was filed on August 31, 2007, which constitutes prior art under at least 35 U.S.C. § 102(e);
- Web Services Description Language (WSDL) 1.1, W3C Note (Mar. 15, 2001) ("WSDL 1.1") (available at https://www.w3.org/TR/wsdl.html), archived at least as early as February 7, 2006 at https://web.archive.org/web/20060207231125/https://www.w3.org/TR/wsdl.html, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- Web Services Description Language (WSDL) 2.0, W3C Recommendation (June 26, 2007) ("WSDL 2.0") (available at https://www.w3.org/TR/wsdl/), archived at least as early as June 29, 2007 at https://web.archive.org/web/20070629152558/http://www.w3.org/TR/2007/REC-wsdl20-20070626/, which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- Media Queries, W3C Candidate Recommendation (June 6, 2007) ("Media Queries") (available at https://www.w3.org/TR/2007/CR-css3-mediaqueries-

20070606/), archived at least as early as June 9, 2007 at https://web.archive.org/web/20070609192318/https://www.w3.org/TR/2007/CR-css3-mediaqueries-20070606/, which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);

- J. Snell, *Programming Web Services with SOAP*, O'Reilly (Dec. 2001) ("Snell"), which constitutes prior art under at least 35 U.S.C. §§ 102(a) and/or (b);
- A. Barros and M. Dumas, *The Rise of Web Service Ecosystems*, IT Professional (Sept/Oct. 2006) ("Barros") (available at https://ieeexplore.ieee.org/abstract/document/1717340), which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- V. Pankratius, et al., *Retrieving content with agents in web service e-learning systems*, The Symposium on Professional Practice in AI, IFIP WG12 Vol. 6. 2004 ("Pankratius"), which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- W. Wu, et al., *Service oriented architecture for VoIP conferencing*, International Journal of Communication Systems 19.4 (2006): 445-461 ("Wu"), which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- U.S. Patent Appl. Publ. No. 2004/0068567 ("Moran"), which was filed on Oct. 8, 2002 and published on April 8, 2004, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent Appl. Publ. No. 2003/0163537 ("Rohall"), which was filed on December 30, 2002 and published on August 28, 2003, and which constitutes

prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);

- U.S. Patent Appl. Publ. No. 2003/0018705 ("Chen"), which was filed on March 31, 2001 and published on January 23, 2003, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- P. Queloz and A. Villazón, *Distributed Services Built with Mobile Code*, University of Geneva (1999), which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- U.S. Patent Appl. Publ. No. 2003/0070000 ("Coker"), which was filed on October 2, 2001 and published on April 10, 2003, and constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- U.S. Patent No. 8,464,206 ("Jenkins"), which was filed on October 22, 2008 claiming priority to a provisional application filed October 22, 2007 and issued on June 11, 2013, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. § 102(e);
- U.S. Patent No. 8,564,544 ("Jobs"), which was filed on September 5, 2007 and issued on October 22, 2013, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. § 102(e);
- W3C.org, Section 17 of HTML 4.01 Specification (1999) ("Forms"), available at https://www.w3.org/TR/1999/REC-html401-19991224/interact/forms.html and archived at https://web.archive.org/web/20060116060301/https://www.w3.org/TR/1999/REC-html401-19991224/interact/forms.html no later than January 16, 2006, and which

constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);

- V. Piroumian, *Java GUI Development*, Sams (1999) ("Piroumian"), and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- J. Zukowski, *Java AWT Reference*, O'Reilly (1997) ("Zukowski"), and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- EP 1 420 316 A1 ("Rockwell"), which was filed on November 17, 2003 and published on May 19, 2005, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- D. Martin et al., *Bringing Semantics to Web Services with OWL-S*, 10 World Wide Web 3, 243-77 (July 3, 2007) ("Martin"), which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- U.S. Patent Appl. Publ. No. 2005/0015462 ("Lee"), which was filed on March 8, 2004 and published on January 20, 2005, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- G. Banavar et al., *An Authoring Technology for Multi-Device Web Applications*, IBM Research Report RC23168 (W0403-169) (Mar. 30, 2004), which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);

- U.S. Patent No. 7,234,111 ("Chu"), which was filed on September 28, 2001 and issued on June 19, 2007, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a), (b), and/or (e);
- C. Ortiz and E. Giguère, *Mobile Information Device Profile for Java 2 Micro Edition*, John Wiley & Sons (1st Ed. 2001), and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- Universal Description, Discovery, & Integration ("UDDI") OASIS Standard version 2.0 (released 2001), and version 3.0.2 (released 2004), OASIS UDDI Specification Technical Committee (available at http://uddi.xml.org/specification), which constitute prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- T. Eggum, *Application Development using J2ME – Architecture for Device Independence*, Adger University College (July 18, 2005), which constitutes prior art under at least 35 U.S.C. §§ 102(a) and (b);
- J. Grundy and W. Zou, *An Architecture for Building Multi-device Thin-Client Web User Interfaces*, CAISE 2002, LNCS 2348, A. Banks Pidduck et. al (Eds), pp. 728-32 (2002);
- WordPress version 2.1.3 (released Apr. 3, 2007) ("WordPress"), and any associated plugins, extensions, and other features, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b);
- Joomla version 1.0.12 (released Dec. 25, 2006) ("Joomla"), and any associated plugins, extensions, and other features, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b); and

- Drupal version 5.1 (released January 30, 2007) ("Drupal"), and any associated plugins, extensions, and other features, and which constitutes prior art to the Second Set of Patents under at least 35 U.S.C. §§ 102(a) and/or (b).[6]

The prior art which anticipates and/or renders the Second Set of Patents obvious fall into several categories, including web-based technologies, authoring tools, and Application/Player abstractions. By the year 2008, a person of ordinary skill in the art would have been motivated to combine the references within each of these categories and also to combine the references between categories. Among other things, this motivation to combine was driven by emergence of personal handheld electronics with different operating systems, and a desire to build products for these devices. *See, e.g.*, Banavar at 1; Grundy at 728 ("Interfaces need to be provided for conventional web browsers as well as wireless PDAs, mobile phones, and pagers"). As one example of this awareness, by 2008 at least one specification had been introduced relating to standardizing the interfaces on mobile devices, including, e.g., the Mobile Information Device Profile ("MIDP") specification, developed at least as early as April 2001 for the Java platform. *See, e.g.*, C. Ortiz and E. Giguère, *Mobile Information Device Profile for Java 2 Micro Edition*, John Wiley & Sons (1st Ed. 2001). Applications were developed called "MIDlets" that used the MIDP for the Java ME environment. *See, e.g.*, J. Knudsen and S. Li, *Beginning J2ME: Building MIDlets*, JavaWorld (May 2, 2005) (available at

[6] Express Mobile has accused WordPress, Joomla, and Drupal systems of infringing the Second Set of Patents. *See, e.g.*, *Express Mobile, Inc. v. iCrossing, Inc.*, No. 1:18-cv-01176, Am. Compl., ¶¶ 112-29, Dkt. No. 11 (filed Oct. 17, 2018) (alleging infringement due to the use of WordPress); *id.* at ¶ 19 (defining the Accused Instrumentalities as "website building tools used and/or provided by Defendant, such as, for example, Drupal, Wordpress, and/or Joomla"). To the extent Express Mobile's infringement allegations are legitimate, each of these systems anticipates and/or renders obvious the Second Set of Patents.

https://www.javaworld.com/article/2071873/mobile-java-beginning-j2me-building-midlets.html). Integrated Development Environments also existed, including BlackBerry MDS Studio. *See generally* Research In Motion, Ltd., *BlackBerry MDS Studio – Developer Guide* (Jan. 12, 2006) ("Developer Guide").

At the same time, the use of the Internet was exploding. More and more, web sites were becoming interactive, with the ability of the user to request information and receive information regularly, rather than existing merely as a static website. That is, by 2008, the rise of "Web 2.0" was in full force. *See, e.g.*, T. O'Reilly, *What is Web 2.0*, O'Reilly (Sept. 30, 2005) (available at http://oreilly.com/web2/archive/what-is-web-20.html). One of the major developments between Web 1.0 and Web 2.0 was the rise of web applications and web services. *See id.* Web services were well-known as of 2008. The W3C had published the specification for the WSDL in March, 2001. *See* WSDL 1.1. Finally, by 2008, GUIs were the standard in most computing devices. Windows ruled the desktop world. *See* G. Keizer, *Windows Market Share Drops Again as Mac Nears 10%*, ComputerWorld (Jan. 6, 2009) (reporting that in December 2008, 88.7% of people who browsed the Web sites monitored by Net Applications Inc. "did so using machines powered by Windows" and another 9.6% used Mac OS X). And Apple had introduced the first iPhone on January 9, 2007. *See* M. Honan, *Apple unveils iPhone*, Macworld (Jan. 9, 2007) (available at https://www.macworld.com/article/1054769/iphone.html).

Thus as of 2008, there was a desire to build mobile applications for various platforms, a growing use of web services, and dominance by use of GUIs to access those services. *See, e.g.*, Grundy at 729 ("Many organisations want to leverage the increasingly wide-spread access of their staff (and customers) to thin-client user interfaces on desktop, laptop and mobile (PDA, phone, pager etc) devices but without developing versions of every user interface for every

possible device, user and user task combination possible.") For these reasons, researchers were exploring the best ways to build wireless solutions for web services. *See, e.g.*, M. Shenfield and B. Goring, *Best Practices for Building Optimized Wireless Solutions for Web Services*, Presentation JavaOne Conference, Session TS-1293 (2006) ("Best Practices").

a. Device-Independent Application Authoring Tools

Several references relate to the development of applications and abstracting their structure away from any device-dependent code. For example, Chu, Banavar, BlackBerry MDS Studio, Shenfield, Shenfield II, Shenfield III, Shenfield IV, Shenfield V, Shenfield VI, Shenfield VII, Shenfield VIII, Shenfield IX, Shenfield X, Shenfield XI, Shenfield XII, Harmonia, Phanouriou, Carroll, Paddon, Siminoff, Rudolph, Huang, Arner, Hind, WordPress, Greensage, and Stevens disclose authoring tools for creating device independent applications, programs, or web sites. One of ordinary skill would have been motivated to combine any of the tools and features of one authoring tool with another, or to modify any single reference in light of the knowledge of the ordinary artisan as shown in other references, as the references are all directed to the same technology and objective: building device-independent applications, programs, or web sites. For example, Banavar discloses an authoring tool for mobile devices. *See* Banavar at 1. Rudolph discloses an authoring tool relating to widgets. *See generally*, Rudolph. An ordinary artisan would have understood, for example, that the techniques and functionality disclosed in Banavar could be modified to implement widgets, and that the techniques and functionality described in Rudolph could be modified to for mobile applications. One of ordinary skill would also be motivated to modify references relating to authoring tools for applications more generally, such as those disclosed in McCain, to provide for device-independent authoring tools, in order to avoid having to develop multiple versions of the same application. *See, e.g.*, Shenfield III at [0006] ("native applications have a disadvantage of not

being platform independent, thereby necessitating the development of multiple versions of the same application, as well as being relatively large in size, thereby taxing the memory resources of the mobile device").

b. Web Services and Web Components

Several references relate to the provisioning of web services and web components. For example, the BlackBerry MDS Studio, Shenfield, Shenfield II, Shenfield III, Shenfield IV, Shenfield V, Shenfield VI, Shenfield VII, Shenfield VIII, Shenfield IX, Shenfield X, Shenfield XI, Shenfield XII, Harmonia, Phanouriou, Welch, Owen, Owen II, Benedetti, WSDL 1.1, WSDL 2.0, UDDI, Snell, Barros, Pakratius, Wu, Rockwell, Martin, Lee, Huang, Arner, Stevens, Greensage, Hind, WordPress, and Warila references all relate to web services and/or web components. One of ordinary skill would have been motivated to combine any of the web services references with any other web services reference, or to modify any single reference in light of the knowledge of the ordinary artisan as shown in other references, because the references are all directed to the same technology and objective: sending and receiving information from a service on the web. Because these references were directed to the same functionality and objective, one of ordinary skill in the art would have been motivated to combine such references to achieve greater benefits relating to various aspects of web services.

Web services and web components were well known as of 2008. Indeed, their structure had been well-defined by the W3C WSDL specification as early as 2001. *See* WSDL 1.1; *see also* WSDL 2.0. Using web components and web services to retrieve myriad types of data, including without limitation images, RSS, chat, audio, and video data, was also well known as of 2008. *See, e.g.*, WSDL 1.1 (images); Huang (same); Stevens (same) Snell (RSS and chat); Barros (RSS); Pankratius (chat); Wu (audio/video); Rockwell (chat); Martin (advertisements); Lee (CD Bundle and Java Bytecode). An ordinary artisan would know that, because of the

WSDL specification and the standardized methods for accessing web services, knowledge regarding programming to send and receive data from one type of web service (e.g., RSS), could be applied to send and receive data from another type of service (e.g. chat), or the two types of services could both be accessed.

c. GUI Object Components

Several references relate to GUI object components, including BlackBerry MDS Studio, Shenfield, Shenfield II, Shenfield III, Shenfield IV, Shenfield V, Shenfield VI, Shenfield VII, Shenfield VIII, Shenfield IX, Shenfield X, Shenfield XI, Shenfield XII, Rudolph, Chu, Moran, Rohall, Chen, Queloz, Corker, Jenkins, Jobs, Forms, Piroumian, Simonoff, Zukowski, Arner, Huang, Stevens, WordPress, and Warila. One of ordinary skill would have been motivated to combine any of the disclosures of these references with the disclosures of another, or to modify any single reference in light of the knowledge of the ordinary artisan as shown in other references, as they are all directed to the same technology and objective: providing a graphical user interface. Indeed, as discussed above, the by 2008 GUIs were ubiquitous and expected by consumers. Thus an artisan with knowledge of one type of GUI (e.g., a chat GUI) and its use in receiving and displaying content would be motivated to explore and consider the use of other GUIs for receiving and displaying content. For example, BlackBerry MDS Studio discloses various GUI objects (including choice, checkbox, editBox, button, and label) that can be used depending on what type of data is expected. *See* Developer Guide at 17. An ordinary artisan with knowledge of GUI objects would understand that other GUI objects could be used, depending on context and the desired inputs and outputs, and what GUI object would be appropriate. *See generally, e.g.*, Piroumian.

d. Motivations to Combine – Device-Independent Application

Authoring Tools with Web Services and Web Components

One of ordinary skill in the art would be motivated to combine any of the device-independent application authoring tools with any of the web services and web components. That is, ordinary artisans would be motivated to add web services and web components to applications built by authoring tools (whether those applications were device independent or not). Indeed, Shenfield III, for example, notes that "[t]here are a continually increasing number of terminals and mobile devices in use today, such as smart phones, PDAs with wireless communication capabilities, personal computers, self service kiosks and two-way pagers/communication devices" and that "mobile communication devices are primarily configured to communicate with web-based applications, such as service oriented applications, through web browsers and/or native applications." Shenfield III at [0005], [0006]. Shenfield III then explains that "[t]here is a need for application development environments that can assist in the development of applications for selected devices and terminals." *Id.* at [0006]. Shenfield III then discloses its invention of a component-based, device agnostic applications designed to operate in multiple device-dependent runtime environments. *See generally*, Shenfield III. That is, Shenfield III explains that mobile devices users access web services on their devices, and there is a need to create device-independent applications in an authoring tool that allow these users to access these web services. Additional reasons are discussed in Best Practices.

As another example, Nachnani, which is incorporated by reference into Huang,[7] states that "Rapid Application Development (RAD) tools address" the problems of building custom applications without specialized knowledge of programming languages. Nachnani at [0007]. Nachnani notes that such "RAD tools are generally easier to learn and use than conventional

[7] Huang at [0006] (incorporating U.S. Patent Appl. No. 11/241,073 to Nachnani ("Nachnani").

programming-language based approaches for developing applications, and can shorten the time required to develop applications." *Id.* Nachnani further explains "there is a need for non-programmers to design, develop, and deploy simple to complex, composite and monolithic applications in the business world today." *Id.* at [0008]. Nachnani also recognizes that "several" such RAD tools already existed as of that date that "provid[e] graphical user interface builder tools that can be easily connected to business logic" and later states that "it would be desirable to have an easy-to-use RAD tool which is itself a web application, and which allows a user to quickly develop and customize web-based data processing applications that can include data input, validation, processing, and linkage with web services." *Id.* at [0009], [0011].

Arner also discusses the need for tools that are easy to use for non-programmers, and that can develop applications for varying devices. Arner at 1:30-3:15. Arner discloses that "ideally", it is important to address each of the limitations of systems that don't provide for ease of use and development for multiple devices, including that the applications be device-independent. *Id.* at 3:17-20; *see also id.* at 5:8-10 ("Therefore there is a need for a method for developing RIAs for a variety of devices, including both desktop and mobile devices that overcomes the above mentioned security, access control, computing power, bandwidth and platform problems.").

e. Motivations to Combine – Device-Independent Application Authoring Tools with GUI Object Components

One of ordinary skill in the art would be motivated to combine any of the device independent authoring tools references with any of the GUI object components references, or to modify the device independent authoring tools references in light of the knowledge of GUI object components as disclosed in the GUI object component references. That is, ordinary artisans would be motivated to add the ability to add various GUI components to their applications (whether those applications were device independent or not). Indeed, Chu presents

one such disclosure, and discusses a motivation for combining device-independent applications with GUIs. Specifically, Chu discusses developing graphical user interface "scaleable applications to operate on any of a plurality of heterogenous device platforms." Chu at 2:7-10. Chu explains in the background the motivation for doing so includes lessening the time it takes for developers to learn new languages for each GUI-based platform. *Id.* at 1:58-2:3. As another example, Rudolph discloses that its authoring tool creates GUI widgets. *See, e.g.*, Rudolph at Fig. 3C, Fig. 4, Fig. 5. Rudolph discloses that its website creation tools are "targeted to the consumer market" and its disclosure is "generally related to media authoring tools." *See id.* at 1:10, 1:5-6. Indeed, several of the references relate to other aspects of the claimed inventions. For example, Chu relates to authoring tools for device-independent applications as well as GUIs. Rudolph, in disclosing graphical widgets, and BlackBerry MDS Studio as well as each of the Shenfield references in disclosing "presentation" components, both disclose graphical user interfaces. As another example, Nachnani discloses that it would "be desirable to provide a RAD tool with a scripting language which can change or extend the behavior of web applications without the additional overhead of recompilation or redeployment." Nachnani at [0011]. Thus it is clear artisans were motivated to combine authoring tools for device-independent applications as well as GUIs. Finally, Stevens also discloses that for reasons discussed in [0003] – [0013], "there is a need for an improved system and method for creating and delivering applications and graphical user interfaces to a user." Stevens at [0014].

f. Motivations to Combine – Web Services, Web Components, and GUI Object Components

One of ordinary skill in the art would be motivated to combine web services and their related web components with GUI object components. That is, ordinary artisans would be motivated to present inputs and outputs of various web services and web components through a

graphical user interface. As mentioned, as of 2008 most internet users accessed the web through a graphical user interface, and expected a graphical user interface to interact with various web services. Indeed, at least Shenfield recognizes that consumers communicate with web services through Internet based browsers or native applications, which were at that time almost all GUI based. Shenfield at [0003]. As another example, Huang states that "it would be useful to support web services in software applications, and other software objects, and executing same." Huang at [0006]. Similarly, Arner recognizes that incorporating the functionality of web services into UI components is desirable. *See, e.g.*, Arner at 1:30-2:2 ("Rich Internet Applications (RIA) are smart-client web-applications that have the functionality of traditional desktop applications, but transfer the processing necessary for the user interface to the web client while keeping the bulk of the data back on the application server."); *id.* at 1:18-26 ("Smart-client applications are applications that combine the best of the desktop applications and web-based applications. They use local hardware and software resources and provide a rich user interface experience. . . . Smart-client applications are poised to replace traditional web-based applications on desktop computing devices and eventually on remote mobile devices because computer users are accustomed to a rich media experience and expect to have a similarly rich experience when they use web-based applications, even on mobile devices.")

g. Motivations to Combine – Device-Independent Application Authoring Tools with Web Services, Web Components, and GUI Object Components

One of ordinary skill in the art would be motivated to create device-independent application authoring tools that would allow for the development of applications that accessed and used web services and their related web components with GUI object components. Indeed, BlackBerry MDS Studio was one such combination, and each of the Shenfield references discusses the motivation behind the combination of the features in the "Background" section, for

example:

> [0005] There are a continually increasing number of terminals and mobile devices in use today, such as smart phones, PDAs with wireless communication capabilities, personal computers, self service kiosks and two-way pagers/communication devices. Software applications which run on these devices increase their utility. For example, a smart phone may include an application which retrieves the weather for a range of cities, or a PDA may include an application that allows a user to shop for groceries. These software applications take advantage of the connectivity to a network in order to provide timely and useful services to users. However, due to the restricted resources of some devices, and the complexity of delivering large amounts of data to the devices, developing and maintaining software applications tailored for a variety of devices remains a difficult and time-consuming task.
>
> [0006] Currently, mobile communication devices are primarily configured to communicate with web-based applications, such as service oriented applications, through web browsers and/or native applications. Browsers have the advantage of being adaptable to operate on a cross-platform basis for a variety of different devices, but have a disadvantage of requesting pages (screen definitions in HTML) from the application, which hinders the persistence of data contained in the screens. A further disadvantage of browsers is that the screens are rendered at runtime, which can be resource intensive. Native applications have the advantage of being developed specifically for the type of mobile device, thereby providing a relatively optimized application program for each runtime environment. However, native applications have a disadvantage of not being platform independent, thereby necessitating the development of multiple versions of the same application, as well as being relatively large in size, thereby taxing the memory resources of the mobile device. Further, application developers need experience with programming languages such as Java and C++ to construct these hard-coded native applications. There is a need for application development environments that can assist in the development of applications for selected devices and terminals with their respective runtime environment, as well as being capable of assisting the selection from a variety of back-end data sources.
>
> [0007] Systems and methods disclosed herein provide a component based application development environment to obviate or mitigate at least some of the above presented disadvantages.

Shenfield III at [0004]-[0007].

As another example, Arner explains that "applications for remote mobile devices (i.e., mobile remote applications) are difficult to develop and deploy due to the varying platforms and operating systems." Arner at 2:11-13. Arner further explains:

> Historically, mobile application development has been performed by highly trained programmers. However, more and more lay people are attempting to develop applications, but the currently available development languages and environments make the task difficult for non- highly trained programmers. The intermittent connectivity of mobile devices makes downloading and deploying of applications an error-prone process, which becomes more error-prone the richer and larger the application becomes. In addition, mobile devices often require the use of device-specific mechanisms to install applications above and beyond the effort needed to get the actual bytecodes onto the device. High-value applications, such as mobile payment applications, often have to be certified by a neutral third party to adhere to best security practices. The certification process for wireless applications is extremely lengthy, involving certification of all elements of the application, such as the server software, the client software, the communications protocol, among others. In some cases, certification can last several years, so that the majority of the development cycle is spent waiting.

Arner at 2:18-31. Arner explains that as a result, "it is desirable for applications to be platform independent, allowing an enterprise to deploy it on its mobile devices as well as its desktop machines and other devices. However, existing client pieces for delivering RIAs are too heavy for cellphones, and existing smart client solutions require programming knowledge, which excludes many potential developers." *Id.* at 3:18-22. Stated differently, "there is a need for a method for developing RIAs for a variety of devices, including both desktop and mobile devices that overcomes the above mentioned security, access control, computing power, bandwidth and platform problems." *Id.* at 5:8-10. Arner also notes that, in its invention, "the use of an application player rather than attempting to run RIAs directly on the client device provides platform independence for the RIA, enables functionality even when off-line, and abbreviates the length of the application certification process. Applications are easy to develop through the

system Integrated Development Environment (IDE)." *Id.* at 5:27-31.

For at least the reasons discussed in the Shenfield and Arner references, an ordinary artisan would be motivated to create device-independent application authoring tools that would allow for the development of applications that accessed and used web services and their related web components with GUI object components.

B. 35 U.S.C. § 112: Written Description, Enablement, Indefiniteness

1. Written Description

Shopify incorporates the discussion of the written description requirement, above, in its entirety by reference herein. *See* Part II.B.1, *supra*.

The intrinsic record demonstrates that the inventor did not possess the full scope of the inventions as claimed in the '755 Asserted Claims, including but not limited to the use of any Player that receives output symbolic names and corresponding one or more output values and provides instructions for a display of the device to present an output value in the defined UI object. The '755 Asserted Claims on their face purport to cover the use of ***any*** file that receives output symbolic names and corresponding one or more output values and provides instructions for a display of the device to present an output value in the defined UI object. In its infringement contentions, Express Mobile appears to argue that Shopify infringes the '755 patent on the basis of an www-embed-player.js file. *See* Express Mobile's '755 Infringement Contentions p. 20, 26-27. However, the intrinsic record demonstrates that the inventor lacked possession of the full scope of the inventions as claimed at the time of the filing because it is clear that at most, only Players based on Java CDC, J2SE or MIDP2 abstraction implementations were actually used to implement the invention. *See* '755 patent at 7:21-29. Furthermore, every embodiment in the specification makes use of a Java-related Player. *See id.*; *id.* at 5:56-64; 6:48-63; 10:12-29. Nothing in the intrinsic record refers to the use of a Player that is based on any other

implementation. The claim term "Player receives output symbolic names and corresponding one or more output values and provides instructions for a display of the device to present an output value in the defined UI object" lacks written description.

It is also clear from the intrinsic record that the inventor did not possess the full scope of the inventions as claimed in the '755 Asserted Claims because the inventor did not possess an invention including a computer memory storing a registry of symbolic names required for evoking one or more web components each related to a set of inputs and outputs of a web service obtainable over a network. The specification of the '755 patent includes only two mentions of the word "symbolic," and it refers only to "the mechanism for binding the outputs of the web service to the *UI components*," not any web components. *See* '755 patent at 9:11-16 (emphasis added). Indeed, none of the specification citations cited by the applicant in its appeal brief filed on Nov. 26, 2014 relating to this element disclose a computer memory storing a registry of *symbolic names* required for evoking one or more web components each related to a set of inputs and outputs of a web service obtainable over a network. *See* XMO000981 (citing paragraphs [0006], [0050], [0051], [0056], [0068]-[0074] and non-existent Web Component 319a of Fig. 3E). The claim term "computer memory storing a registry of symbolic names required for evoking one or more web components each related to a set of inputs and outputs of a web service obtainable over a network" lacks written description support. For similar reasons, the terms "access said computer memory to select the symbolic name corresponding to the web component of the defined UI object," "associate the selected symbolic name with the defined UI object," "produce an Application including the selected symbolic name of the defined UI object," and any other terms referencing symbolic names other than those relating to the mechanism for binding the outputs of the web service to the UI components lack written description support.

The ’755 Asserted Claims, as interpreted and applied by Express Mobile in its infringement contentions, fail to meet the written description requirement because the inventor did not possess the full scope of the inventions claimed in the ’755 Asserted Claims at the time of filing. For example, Express Mobile appears to claim that a “Player” is any HTML, CSS, JavaScript, or other code that has conditional operations based on what browser, device, or operating system the “Player” is operating on. This interpretation is inconsistent with the construction of “Player” provided by the Court. Moreover, the specification does not describe such a “Player.” For example, the specification includes discussion of sending the “correct Player” to a device. *See* ’755 patent at 33:26-37. Such a system would be unnecessary if the Player merely contained conditional operations for various browsers, devices, or operating systems. As another example, the ’755 patent specification does not describe how an authoring tool can “produce a Player,” as required by claim 1 of the ’755 patent. The specification demonstrates that the inventor did not have possession of an invention where the authoring tool produces a Player.

As described above, it would be apparent to one of skill in the art, based on the specification, that the invention set forth in a claim is not what the inventor regarded as his invention, such that the ’755 Asserted Claims are invalid under Paragraph 1 of § 112.

2. Enablement

The ’755 Asserted Claims are invalid for lack of enablement because the specification of the ’755 patent fails to teach one of skill in the art to make and use the full scope of the invention of the ’755 Asserted Claims without undue experimentation. The specification includes no description of how to produce a Player such that it provides “device or device-platform specific instructions for [a] processor [] of the device” where “[a] device having the correct Player is then able to interpret and be programmed according to the Application.” ’755 patent at 5:8:12, 5:22-

24. It also does not explain to one of ordinary skill how he or she could implement such a Player. The full scope of the '755 patent encompasses the full range of Players for any device platform available at the time but the specification does not teach how to make each and every Player, making it impossible to make or use the full scope of the invention without undue experimentation. The claim term "Player" lacks enablement.

3. Indefiniteness

35 U.S.C. § 112, ¶ 2 requires the patent specification to "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." A patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus, Inc.*, 572 U.S. at 910-11.

The '755 Asserted Claims are invalid as indefinite. The claim term "symbolic names required for evoking one or more web components each related to a set of inputs and outputs of a web service obtainable over a network," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. The specification does not disclose the meaning of this term with reasonable certainty. The only symbolic names disclosed in the specification relate to UI components.

The '755 Asserted Claims are invalid as indefinite. The claim term "UI object corresponds to [the/a] web component included in said registry selected from the group consisting of an input of the web service and an output of the web service," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. The term is

unintelligible.

C. 35 U.S.C. § 101: Abstract Idea and Lack of Utility

Shopify incorporates the discussion of § 101, above, in its entirety herein. *See* Part II.C, *supra*.

Independent claims 1 and 12 of the '755 patent are directed to the abstract idea of building tools that are used to communicate with third parties via a structured "form." This type of functionality has been performed by hand by humans for decades, for example in the context of forms submitted to the IRS. A tax payer would receive her W-2 in a structured form (e.g. a UI object) and would use that information to fill out a structured form (her tax return) to send to the IRS. Simply moving it to a computer-based or Internet setting utilizes only conventional computer technologies and lacks any inventive concept. For example, humans could prepare code for the communication with web services using general purpose computer hardware and software. Indeed, the applicant admitted that web services and web components were well known in the art, and relied on these well-defined standards in arguing the applicant's invention was different than prior art cited by the examiner. *See, e.g.*, XMO001120-22. The applicant, in citing this information, further admitted that web services request and response calls include information regarding data types, and consequently, related UI components. *See id.* The only plausible distinction over what was already well known, routine, and conventional over the prior art was an idea for separating the code into a device-independent aspect and a device-dependent aspect. However the patent does nothing more than describe this aspect at a high level, without providing any disclosure as to how to actually *produce* the two codes, including for example how to produce code for a variety of different platforms and devices. As a result, the '755 patent is directed to nothing more than the abstract idea of separating code into two different parts.

The asserted dependent claims simply add more routine steps, and none of the limitations

of each claim considered together provide an inventive concept that transforms any claim into patent eligible subject matter. As reflected in the Exhibits hereto, the claims are directed to known functionality. Thus, the asserted claims of the '755 patent are directed to patent ineligible subject matter and are invalid under § 101.

In addition, claims 12, 14-18, and 22 fail the requirements of 35 U.S.C. § 101 because the term "where said Application is a device-dependent code" lacks utility. The '755 patent defines an Application as, among other things, a "device-independent program." '755 patent at 5:14-15. Thus the term "where said [device-independent program] is a device-dependent code" is impossible, and thus fails to meet the requirements of 35 U.S.C. § 101. *See Newman v. Quigg*, 877 F.2d 1575 (Fed. Cir. 1989).

V. U.S. PATENT NO. 9,471,287

A. 35 U.S.C. §§ 102 and 103: Anticipation and Obviousness

Shopify incorporates by reference the prior art identified by Shopify related to the '755 Asserted Claims. *See* Part IV.A, *supra*.

Charts citing exemplary disclosures of each limitation of each asserted claim in each of the above references may be found in Exhibits D-* to Shopify's Second Supplemental Invalidity Contentions. These invalidity assertions are not an admission by Shopify that any of the accused products are covered by or infringe these claims, particularly when these claims are properly construed. These invalidity assertions are not an admission that Shopify concedes any claim construction implied or suggested by Express Mobile's Counterclaims or Infringement Contentions. Nor is Shopify taking any claim construction positions through these charts, including whether the preamble is limiting.

Shopify reserves the right to identify additional prior art references that, when combined with the prior art, would render the subject matter of the claims obvious. Each anticipatory prior

art reference disclosed in the preceding section, either alone or in combination with other prior art, also renders the '287 Asserted Claims invalid as obvious. Each anticipatory prior art reference may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) any of the other anticipatory prior art references, and/or (3) any of the additional prior art identified in this section. Shopify's contention that the anticipatory prior art references may be combined to render the asserted claims of the '287 patent obvious under 35 U.S.C. § 103 is not an admission or suggestion that the references do not independently anticipate or render obvious the asserted claims. Moreover, in addition to the below combinations, one of ordinary skill in the art would have arrived at the claimed invention based on the references and admitted prior art listed in the attached claim charts in combination with the references in this section and its subsections and the natural progression of the field or common sense.

In addition, Shopify reserves the right to raise the argument that the '287 patent is invalid due to Express Mobile selling, offering to sell, or otherwise making available an embodying product more than one year prior to the priority date to which the '287 patent is entitled. Express Mobile has failed to produce information and documents within Express Mobile's custody or control required to make this argument. Shopify will supplement this disclosure when Express Mobile produces the required information.

1. Prosecution History and Related Applications

Shopify incorporates by reference the prior art references of record in the prosecution of the '287 patent and related applications, as well as the prior art discussed in the specification of each of these patents. Shopify reserves the right to present additional arguments.

2. Obviousness

Shopify incorporates by reference the obviousness arguments related to the '755 patent

above, in its entirety herein. *See* Part IV.A.2, *supra*.

B. 35 U.S.C. § 112: Written Description, Enablement, Indefiniteness

1. Written Description

The '287 Asserted Claims are invalid for lack of written description for the same reasons as discussed in connection with the '755 patent. *See* Part IV.B.1, *supra*.

2. Enablement

The '287 Asserted Claims are invalid for lack of enablement for the same reasons as discussed in connection with the '755 patent. *See* Part IV.B.2, *supra*.

3. Indefiniteness

35 U.S.C. § 112, ¶ 2 requires the patent specification to "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." A patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus*, 572 U.S. at 910-11.

The '287 Asserted Claims are invalid as indefinite. The claim term "where said UI object corresponds to a web component included in said registry selected from the group consisting of an input of the web service and an output of the web service," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention.

The '287 Asserted Claims are invalid as indefinite. The claim term "associated data format class type corresponding to a subclass of User Interface objects that support the data format type of the symbolic name," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. The meaning of the term "subclass" is not reasonably certain,

as a person of ordinary skill would not know what "subclass" refers to. For example, the claims do not specify what "a subclass" is a subclass of. The term "subclass" does not appear in the specification apart from the claims.

The '287 Asserted Claims are invalid as indefinite. The claim term "data format type of the symbolic name," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. The meaning of the term "data format type of the symbolic name" is not reasonably certain, as a person of ordinary skill would not know what a data format type of a symbolic name is.

The '287 Asserted Claims are invalid as indefinite. The claim term "authoring tool configured to . . . " is subject to interpretation under 35 U.S.C. § 112, ¶ 6 because the claim term "authoring tool" fails to recite sufficiently definite structure and/or recites function without sufficient structure for performing that function. The specification, however, does not disclose sufficient structure corresponding to the claimed function. For example, the specification does not contain sufficient structure for the function of "associate the selected symbolic name with the defined UI object." Instead, the specification merely recites the function itself, without describing any *structure* used to accomplish this function. *See, e.g.*, '287 patent at 9:22-25 (stating that "[i]n one embodiment, the mechanism for binding the outputs of the web service to the UI components is through symbolic references that matches each output to the symbolic name of the UI component" but failing to describe any structure that associates the symbolic name with the UI component in the first instance). As another example, the specification does not contain sufficient structure for the function of "produce . . . a Player, where said Player is a

device-dependent code."[8] Instead, the specification merely claims one is produced, without describing any *structure* used to accomplish this function. *See, e.g., id.* at 5:13-18 ("In one embodiment, system 100 provides permits [sic] a user of authoring platform 110 to provide instructions to each of the plurality of devices 130 in the form of a device- or device-platform specific instructions for processor 135 of the device, referred to herein and without limitation as a "Player[.]") As a result, the '287 Asserted Claims are indefinite under 35 U.S.C. § 112, ¶ 2. *See Williamson*, 792 F.3d at 1349-52.

Claim 11 of the '287 patent fails the requirements of 35 U.S.C. § 112, ¶ 2 because the term "said code" fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention.

C. 35 U.S.C. § 101: Abstract Idea and Lack of Utility

The '287 Asserted Claims are invalid for claiming an abstract idea for the same reasons as discussed above in connection with the '755 patent. *See* Part IV.C, *supra*.

VI. U.S. PATENT NO. 9,928,044

A. 35 U.S.C. §§ 102 and 103: Anticipation and Obviousness

Shopify incorporates by reference the prior art identified by Shopify related to the '755 Asserted Claims. *See* Part IV.A, *supra*.

Charts citing exemplary disclosures of each limitation of each asserted claim in each of the above references may be found in Exhibits E-* to Shopify's Second Supplemental Invalidity Contentions. These invalidity assertions are not an admission by Shopify that any of the accused products are covered by or infringe these claims, particularly when these claims are properly

[8] Based on the applicant's statements in the file history, it is clear that the authoring tool must "produce . . . a Player." *See* XMO000418.

construed. These invalidity assertions are not an admission that Shopify concedes any claim construction implied or suggested by Express Mobile's Counterclaims or Infringement Contentions. Nor is Shopify taking any claim construction positions through these charts, including whether the preamble is limiting.

Shopify reserves the right to identify additional prior art references that, when combined with the prior art, would render the subject matter of the claims obvious. Each anticipatory prior art reference disclosed in the preceding section, either alone or in combination with other prior art, also renders the '044 Asserted Claims invalid as obvious. Each anticipatory prior art reference may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) any of the other anticipatory prior art references, and/or (3) any of the additional prior art identified in this section. Shopify's contention that the anticipatory prior art references may be combined to render the asserted claims of the '044 patent obvious under 35 U.S.C. § 103 is not an admission or suggestion that the references do not independently anticipate or render obvious the asserted claims. Moreover, in addition to the below combinations, one of ordinary skill in the art would have arrived at the claimed invention based on the references and admitted prior art listed in the attached claim charts in combination with the references in this section and its subsections and the natural progression of the field or common sense.

In addition, Shopify reserves the right to raise the argument that the '044 patent is invalid due to Express Mobile selling, offering to sell, or otherwise making available an embodying product more than one year prior to the priority date to which the '044 patent is entitled. Express Mobile has failed to produce information and documents within Express Mobile's custody or control required to make this argument. Shopify will supplement this disclosure when Express

Mobile produces the required information.

1. Prosecution History and Related Applications

Shopify incorporates by reference the prior art references of record in the prosecution of the '044 patent and related applications, as well as the prior art discussed in the specification of each of these patents. Shopify reserves the right to present additional arguments.

2. Obviousness

Shopify incorporates by reference the obviousness arguments related to the '755 Asserted Claims, above, in its entirety herein. *See* Part IV.A.2, *supra*.

B. 35 U.S.C. § 112: Written Description, Enablement, and Indefiniteness

1. Written Description

The '044 Asserted Claims are invalid for lack of written description for the same reasons as discussed in connection with the '755 patent. *See* Part IV.B.1, *supra*.

In addition, the intrinsic record demonstrates that the inventor did not possess the full scope of the inventions as claimed in claim 1 of the '044 patent, including but not limited to a system including an authoring tool configured to "build an application consisting of one or more web page views from at least a portion of said database utilizing the player." The intrinsic record demonstrates that the inventor lacked possession of the full scope of the inventions as claimed at the time of the filing because it is clear that the inventor did not possess an invention where an authoring tool is used to build an application using a player. The claim term "authoring tool configured to . . . build an application consisting of one or more web page views from at least a portion of said database utilizing at least one player" lacks written description.

2. Enablement

The '044 Asserted Claims are invalid for lack of enablement for the same reasons as discussed in connection with the '755 patent. *See* Part IV.B.2, *supra*.

In addition, the specification includes no description of how an "authoring tool [is] configured to . . . build an application consisting of one or more web page views from at least a portion of said database utilizing at least one player." It also does not explain to one of ordinary skill how he or she could implement such an authoring tool, or how an authoring tool is configured to build an application utilizing at least one player. The claim term "authoring tool [is] configured to . . . build an application consisting of one or more web page views from at least a portion of said database utilizing at least one player" lacks enablement

3. Indefiniteness

35 U.S.C. § 112, ¶ 2 requires the patent specification to "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." A patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus*, 572 U.S. at 910-11.

Claim 1 is invalid as the term "web component included in said registry selected from the group consisting of an input of the web service and an output of the web service," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention.

The '044 Asserted Claims are invalid as the term "where said player utilizes information stored in said database to generate for the display of at least a portion of said one or more web pages," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. The term is unintelligible.

The '044 Asserted Claims are invalid as indefinite. The claim term "associated data format class type corresponding to a subclass of User Interface objects that support the data

format type of the symbolic name," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. The meaning of the term "subclass" is not reasonably certain, as a person of ordinary skill would not know what "subclass" refers to. For example, the claims do not specify what "a subclass" is a subclass of. The term "subclass" does not appear in the specification apart from the claims.

The '044 Asserted Claims are invalid as indefinite. The claim term "data format type of the symbolic name," when read in light of the specification delineating the patent, and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. The meaning of the term "data format type of the symbolic name" is not reasonably certain, as a person of ordinary skill would not know what a data format type of a symbolic name is.

C. 35 U.S.C. § 101: Abstract Idea and Lack of Utility

The '044 Asserted Claims are invalid for claiming an abstract idea for the same reasons as discussed above in connection with the '755 patent. *See* Part IV.C, *supra*.

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MCCARTER & ENGLISH, LLP

/s/ Daniel M. Silver

Daniel M. Silver (#4758)
Alexandra M. Joyce (#6423)
Renaissance Centre
405 N. King St., 8th Fl.
Wilmington, DE 19801
(302) 984-6331
dsilver@mccarter.com
ajoyce@mccarter.com

Attorneys for Plaintiffs/Counterclaim Defendants Shopify Inc. and Shopify (USA), Inc.

OF COUNSEL:

Adam R. Brausa
Timothy C. Saulsbury
Vera Ranieri
Whitney R. O'Byrne
Timothy P. Horgan-Kobelski
DURIE TANGRI LLP
217 Leidesdorff Street
San Francisco, CA 94111
(415) 362-6666
abrausa@durietangri.com
tsaulsbury@durietangri.com
vranieri@durietangri.com
wobyrne@durietangri.com
tkobelski@durietangri.com